PHASE I BOOK EXPLOITATION   SOV/5763

Vaynberg, David Veniaminovich, and Aleksandr Leonidovich Sinyav-
skiy

Raschet obolochek (Calculation for Casings) Kiyev, Gosstroyizdat
UkrSSR, 1961. 118 p. 5500 copies printed.

Ed.: I. Ye. Reznichenko; Tech. Ed.: V. P. Boyko.

PURPOSE : This book is intended for engineers and scientific
workers. It may also be useful to aspirants and students
at technical schools of higher education.

COVERAGE: The book deals with a method for computing shells
which is based on the use of the solution of problems of
two-dimensional stress conditions and bending of plates.
Cylindrical shells with rectangular and elliptical cutouts
are examined. V. Z. Zhdan, V. G. Gorchakov, and I. Z.
Roytfarb, aspirants, cooperated in compiling and computing
materials for tables. The author thanks O. D. Oniashvili.

Card 1/4

VAYNBERG, D.V.

24.4200   11D3

28684
S/021/60/000/007/007/009
D211/D305

AUTHORS: Vaynberh, D.V., and Synyavs'kyy, O.L.

TITLE: Applying the method of potentials to the numerical
               analysis of the deformation of a cylindrical shell

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no.7,
               1960, 907 – 912

TEXT: The aim of the paper is to give the numerical method of
solving a system of integral equations of the theory of a thin cy-
lindrical shell. The author starts with the general differential
equations for statical equilibrium of the cylindrical shell by li-
near deformations. They are

$$\frac{\partial^2 u}{\partial \alpha^2} + \frac{1-\nu}{2}\cdot\frac{\partial^2 u}{\partial \beta^2} + \frac{1+\nu}{2}\cdot\frac{\partial^2 v}{\partial \alpha \partial \beta} + \frac{\nu}{R}\cdot\frac{\partial w}{\partial \alpha} = -\frac{1-\nu^2}{Eh}X,$$

$$\frac{1+\nu}{2}\cdot\frac{\partial^2 u}{\partial \alpha \partial \beta} + \frac{\partial^2 v}{\partial \beta^2} + \frac{1-\nu}{2}\cdot\frac{\partial^2 v}{\partial \alpha^2} + \frac{1}{R}\cdot\frac{\partial w}{\partial \beta} = -\frac{1-\nu^2}{Eh}Y, \qquad (1)$$

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Applying the method of potentials ... $S/021/60/000/007/007/009$
$D211/D305$

$$\frac{\nu}{R} \cdot \frac{\partial u}{\partial \alpha} + \frac{1}{R} \cdot \frac{\partial v}{\partial \beta} + c^2 \nabla^2 \nabla^2 w + \frac{1}{R^2} w = \frac{1 - \nu^2}{Eh} Z.$$ (1)

where α, β are coordinates of the mean surface, u, v, w, displacements in the direction of axes α, β, n; X, Y, Z - components of external loading, R - radius of curvature, n - thickness of the shell; $c^2 = h^2/12$. As a fundamental state the cylindrical panel was considered, loaded at the point (α_0, β_0) with the normal force Q and with the following boundary conditions

$u = 0$, $w = 0$, $M_2 = 0$, $N_2 = 0$ for $\alpha = 0$, $\alpha = \alpha_1$,

$v = 0$, $w = 0$, $M_1 = 0$, $N_1 = 0$ for $\beta = 0$, $\beta = \beta_1$.   (2)

Three auxiliary states were considered simultaneously. State 1. means a plane rectangular plate, being the development of the shell, loaded at the point (α, β) in the direction 1. In this case, the differential equations for the displacements u_1, v_1

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Applying the method of potentials ...

$$\frac{\partial^2 u_1}{\partial \xi^2} + \frac{1-\nu}{2} \cdot \frac{\partial^2 u_1}{\partial \eta^2} + \frac{1+\nu}{2} \cdot \frac{\partial^2 v_1}{\partial \xi \partial \eta} = - \frac{1-\nu^2}{Eh} \delta(\xi - \alpha_1 \eta - \beta)$$

$$\frac{1+\nu}{2} \cdot \frac{\partial^2 u_1}{\partial \xi \partial \eta} + \frac{\partial^2 v_1}{\partial \eta^2} + \frac{1-\nu}{2} \cdot \frac{\partial^2 v_1}{\partial \xi^2} = 0.$$
(3)

would be obtained from the first two equations (1) by putting

$$R = \infty, \ w = 0, \ u = u_1, \ v = v_1, \ Z = Y = 0.$$

To satisfy equations beside the force at point (α, β) in the direction 1. the normal load $H_1(\xi, \eta, \alpha, \beta)$ spread over the surface of the shell should be introduced: $H_1(\xi, \eta, \alpha, \beta) =$

$$= \frac{Eh}{1-\nu^2} \cdot \frac{1}{R} \left[\nu \frac{\partial u_1}{\partial \xi} + \frac{\partial v_1}{\partial \eta} \right].$$
(6)

Applying the theorem of mutual work to the fundamental and to the auxiliary state described by Eq. (6) and by displacements $u = u_1$

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D211/D305

Applying the method of potentials ...

$v = v_1$, $w = 0$, a further equation is obtained where the integral is taken over the surface of the plate. Similarly, for the second auxiliary state, the displacements $u = u_2$, $v = v_2$, and the additional load

$$H_2(\xi,\eta,\alpha,\beta) = \frac{Eh}{1 - v^2} \cdot \frac{1}{R} \left[v \frac{\partial u_2}{\partial \xi} + \frac{\partial v_2}{\partial \eta} \right] \qquad (8)$$

are introduced, and the corresponding integral equation obtained. The third auxiliary state was obtained from formulae (1) by putting $R = \infty$, $u = 0$, $w = w_3$; the corresponding differential equation had the form

$$\nabla^2 \nabla^2 w_3 = \frac{12(1 - v^2)}{Eh^3} \delta(\xi - \alpha, \eta - \beta). \qquad (10)$$

[Abstractor's note: Meaning of δ not determined]. To induce to the panel a displacement $u = v$, $v = 0$, $w = w_3$, the additional transver-

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sal loading must be introduced with components

$$H_3(\xi, \eta, \alpha, \beta) = -\frac{Eh}{1-\nu^2} \cdot \frac{\nu}{R} \cdot \frac{\partial w_3}{\partial \xi}, \text{ along the axis } \alpha \qquad (12)$$

$$H_4(\xi, \eta, \alpha, \beta) = -\frac{Eh}{1-\nu^2} \cdot \frac{1}{R} \cdot \frac{\partial w_3}{\partial \eta}, \text{ along the axis } \beta \qquad (13)$$

$$H_0(\xi, \eta, \alpha, \beta) = \frac{Eh}{1-\nu^2} \cdot \frac{1}{R^2} w_3, \text{ along the axis } n. \qquad (14)$$

Using the net as shown in the diagram and using the method of tra-
peziums, 15 algebraical equations are derived giving the values of
u_1, u_2, ... u_{25} as functions of values w_1, w_2 ... w_9. The values of
v_1, v_2, ... v_9, v_{11}, v_{12}, v_{13}, v_{19}, v_{20}, v_{21} were obtained as func-
tions of w_1, w_2, ... w_9. Substituting these values into 9 equations
a further set of 9 equations are obtained

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D211/D305

Applying the method of potentials ...

$$w_1 = -\frac{\lambda^4}{R^2 h^2}\Big[0{,}048\,w_1 + 0{,}024\,w_2 + 0{,}011\,w_3 + 0{,}024\,w_4 + 0{,}019\,w_5 + 0{,}009\,w_6 + 0{,}007\,w_7 + 0{,}006\,w_8 + 0{,}003\,w_9\Big] + 0{,}097\,\frac{Q\lambda^3}{D}\,;$$
A

from which w_1, w_2, ... w_9 could be calculated. Comparison of the
obtained results with the solutions of V.Z. Vlasov (Ref. 1: Obsh-
chaya teoryya obolochek (General Theory of Shells) GITTL, 1949)
shows the difference not greater than 10 %. Finally, the authors
show the solution of a integral equation

$$w(\alpha, \beta) + \iint F(\xi, \eta, \alpha, \beta)w(\xi, \eta)\,d\xi\,d\eta = f(\alpha, \beta) \quad (17)$$

by using the method of successive approximation, proposed by Yu.D.
Sokolov (Ref. 4: UMZh, 9, 1, 82, 1957). There are 1 figure and 4
Soviet-bloc references.

ASSOCIATION: Instytut budivel'noyi mekhaniky (Institute of Building
Mechanics)

SUBMITTED: July 14, 1959

Card 6/7

VAYNBERG, D.V. (Kiyev); ZARUTSKIY, V.A. [Zaruts'kyi, V.O.] (Kiyev); ITENBERG, B.Z. (Kiyev)

Stressed state of cylindrical shells reinforced with ribs. Prykl. mekh. 6 no.4:375-384 '60.   (MIRA 13:11)

1. Institut stroitel'noy mekhaniki AN USSR.
                    (Elastic plates and shells)

VAYNBERG, David Veniaminovich, doktor tekhn. nauk, prof.; SINYAVSKIY, Aleksandr Leonidovich; REZNICHENKO, I.Ye., red.; BOYKO, V.P., tekhn. red.

[Design of shells] Raschet obolochek. Kiev, Gos. izd-vo lit-ry po stroit. i arkhit. USSR, 1961. 118 p.   (MIRA 14:9)
                (Plastic plates and shells)

SHTEYNVOL'F, Lev Izrailevich; VAYNBERG, D.V., doktor tekhn. nauk, prof.,
retsenzent; STAROSEL'SKIY, A.A., kand. tekhn.nauk, dots., retsen-
zent; EPSHTEYN, Yu.V., kand. tekhn. nauk, dots., red.; FURER, P.Ya.,
red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Dynamic calculation of machines and mechanisms] Dinamicheskie
raschety mashin i mekhanizmov. Moskva, Gos. nauchno-tekhn. izd-
vo mashinostroit. lit-ry, 1961. 339 p.   (MIRA 14:9)
        (Machinery—Design and construction)

VAYNBERG, D. V.; SINYAVSKIY, A.L. [Syniavs'kyi, O.L.]

Stress concentration in disks with apertures of special shape. Dop.
AN URSR no.10:1358-1362 '60.   (MIRA 13:11)

1. Kiyevskiy inzhenerno-stroitel'nyy institut. Predstavleno aka-
demikom AN USSR F.P.Belyankinym [Bieliankin, F.P.]
                    (Elastic plates and shells)

VAYNBERG, D.V.; SINYAVSKIY, A.L. [Syniavs'kyi, O.L.]

Application of the method of potentials to the numerical analysis
of the deformation of a cylindrical shell. Dop.AN URSR no.7:907-
912 '60.   (MIRA 13:8)

1. Institut stroitel'noy mekhaniki AN USSR. Predstavleno akademikom
AN USSR F.P.Belyankinym [F.P.Bieliankinym].
         (Elastic plates and shells)

GROZIN, B.D., otv.red.; DRAYGOR, D.A., zam.otv.red.; BARABASH, M.L.,
red.toma; KRAGEL'SKIY, I.V., red.; SEREBSEN, S.V., red.;
FAYNERMAN, I.D., red.; ZASLAVSKIY, S.S., red. Prinimali
uchastiye: BRAUN, M.P., prof.; VAYNBERG, D.V., prof.; PETRENKO,
I.P., kand.tekhn.nauk; SINYAVSKAYA, M.D., inzh.; SHEVCHUK, V.A.,
kand.tekhn.nauk; SEMIROG-ORLIK, V.N., kand.tekhn.nauk; YANKEVICH,
V.F., inzh.; GORB, M.L., kand.tekhn.nauk; RAKHLINA, N.P.,
tekhn.red.

[Increasing the wear resistance and useful life of machinery in
two volumes] Povyshenie iznosostoikosti i sroka sluzhby mashin
v dvukh tomakh. Kiev, Izd-vo Akad.nauk USSR. Vol.1. 1960.
486 p.   (MIRA 13:12)

1. Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashino-
stroitel'noy promyshlennosti. Kiyevskoye oblastnoye pravleniye.
                (Mechanical wear)
                (Mechanical engineering)

S/021/60/000/006/006/019
A153/A029

16.7300

AUTHORS: Vaynberg, D.V.; Itenberg, B.Z.

TITLE: Asymmetrical Deformation of Constructive-Orthotropic Shells

PERIODICAL: Dopovidi Akademiyi nauk Ukrayins'koyi RSR, 1960, Nr. 6, pp. 761 - 765

TEXT: The authors present a purely mathematical method for the investigation of asymmetrical deformation of shells of rotation, reinforced by a sufficiently dense network of orthogonal ribs along the lines of principal curvatures. Such a spatial construction, allowing for the shearing strains, is regarded as a constructive-orthotropic shell. A system of equations is presented for the solution of asymmetrical deformations of the above-specified shells (14 - 16), which are further developed for the case of the above-mentioned deformations when an extraneous surface load is absent (18 - 21). An example of the boundary effect of a cylindrical constructive-orthotropic shell is discussed. Figure 1 shows the magnitudes of sagging and forces instrumental in the creation of the boundary effect. There is 1 figure.

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S/021/60/000/006/006/019
A153/A029

Asymmetrical Deformation of Constructive-Orthotropic Shells

ASSOCIATION: Instytut mekhaniky AN UkrSSR (Institute of Mechanics of the AS
              UkrSSR)

PRESENTED: by F.P. Byelyankin, Academician, AS UkrSSR

SUBMITTED: July 6, 1959

Card 2/2

VAYNBERG, David Veniaminovich; VAYNBERG, Yevgeniya Davidovna; REZNICHENKO,
I., red.; IOAKIMIS, A., tekhn.red.

[Plates and disks; strength, stability, and vibrations] Plastiny,
diski, balki-stenki; prochnost', ustoichivost' i kolebaniia.
Kiev, Gos.izd-vo lit-ry po stroit. i arkhit.USSR, 1959. 1048 p.
(MIRA 13:2)

(Elastic plates and shells)

CA VAYNBERG, C.

17

Edible pepsin from the stomach mucosa of cattle.
G. Vaynberg. Myasnaya Ind. S.S.S.R. 20, No. 2, 87-9
(1949). — A method for extn. of pepsin from cattle stomach
mucosa is presented. A dil. HCl soln. of pH 2 and temp.
40° is used in the extn. The ratio of raw material to
solvent in the 3 extns. are, resp.: 1:2.5, 1:1.75, and 1:1.
The ext. is dried at 35-38°.   M. M. Piskur

GROZIN, B.D., otv.red.; DRAYGOR, D.A., zam.otv.red.; SAMOKHVALOV, Ya.A., red.toma; BRAUN, M.P., red.; FAYNERMAN, I.D., red.; KRAGEL'SKIY, I.V., red.; BARABASH, M.L., red. Prinimali uchastiye: VAYNBERG, D.V., prof.; PETRENKO, I.P., kand.tekhn.nauk; SINYAVSKAYA, M.D., inzh.; SHEVCHUK, V.A., kand.tekhn.nauk; SEMIROG-ORLIK, V.N., kand.tekhn.nauk; YANKEVICH, V.F., inzh.; GORB, M.L., kand.tekhn. nauk; RAKHLINA, N.P., tekhn.red.

[Increasing the wear-resistance and life of machinery] Povyshenie iznosostoikosti i sroka sluzhby mashin. Kiev, Izd-vo Akad.nauk USSR. Vol.2. 1960. 290 p.   (MIRA 14:1)

1. Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashinostroi-
tel'noy promyshlennosti. Kiyevskoye oblastnoye pravleniye.
        (Mechanical wear)   (Machinery)

VAYNBERG, G.D., inzh.; KRICHEVSKAYA, Ye.I., kand. tekhn. nauk;
MAZALOV, A.N., inzh.; ROZENFEL'D, A.G., inzh.; FOLOMIN,
A.I., doktor tekhn. nauk; TESLER, P.A., kand. tekhn. nauk;
SHOLOKHOV, V.G., arkhit.; RUBANENKO, B.R., glav. red.;
ROZANOV, N.P., zam. glav. red.; ONUFRIYEV, I.A., red.;
YUDIN, Ye.Ya., red.; NASONOV, V.N., red.; ISIDOROV, V.V.,
red.; MAKARICHEV, V.V., red.; POLUBNEVA, V.I., inzh., red.

[Improving the durability of industrial built-up roofs]
Voprosy povysheniia dolgovechnosti industrial'nykh sovme-
shchennykh krysh. Moskva, Gosstroiizdat, 1962. 43 p.
(MIRA 17:4)

1. Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-
issledovatel'skiy institut organizatsii, mekhanizatsii i
tekhnicheskoy pomoshchi stroitel'stvu. 2. TSentral'nyy
nauchno-issledovatel'skiy i proyektno-eksperimental'nyy
institut industrial'nykh, zhilykh i massovykh kul'turno-
bytovykh zdaniy Akademii stroitel'stva i arkhitektury SSSR
(for Vaynberg, Krichevskaya, Mazalov, Rozenfel'd, Folomin).
3. Nauchno-issledovatel'skiy institut stroitel'noy fiziki
Akademii stroitel'stva i arkhitektury SSSR (for Sholokhov).
4. Nauchno-issledovatel'skiy institut betona i zhelezobe-
tona Akademii stroitel'stva i arkhitektury SSSR, Perovo
(for Tesler).

VAYNBERG, G.D., inzh.; YEVTIKHIN, V.F., kand. tekhn. nauk; KAZAKOV, I.V., inzh.; KAL'NITSKIY, A.A., kand. tekhn. nauk; NIKOLAYEV, N.A., kand.tekhn.nauk, nauchn. red.

[Asbestos cement elements in rural construction for residential, cultural, and industrial buildings] Asbestotsementnye konstruktsii v sel'skom stroitel'stve dlia zhilykh, kul'turno-bytovykh i proizvodstvennykh zdanii. [By] G.D.Vainberg i dr. Moskva, Stroiizdat, 1965. 63 p. (MIRA 18:3)

SKIRDOVA, K.M.; VAYNBERG, G.F.; KOPYL, A.N.

New types of light-diffusing film material suitable for
lamp shades. Plast.massy no.7:48-49 '62.   (MIRA 15:7)
                        (Plastic films)
                        (Lamp shades)

VAYNBERG, G.S.

Nov 52

USSR/Electricity - Induction Heating

~~Metall~~

"Problem of the Selection of Generators to Step Up Frequency for Induction

Smelting Furnace," Engr G. S. Vaynberg

Prom Energet, No 11, pp 23-24

Published in interests of dicussion. Advocates, on basis of work done by A. V.

Donskoy and tests conducted at a plant in 1951 with 2,500-cps frequency con-

verter consisting of induction motor DAMO-350-2 and 250-kw generator VGO-250-2500,

replacement of 2,500 cps (standard for induction furnaces manufd in USSR) with

1,000 cps and possible use of ignitrons and mercury converters for more efficient

operation.

VAYNBERG, G. S.

AID P - 937

Subject   : USSR/Electricity

Card 1/1   Pub. 27 - 6/25

Author   : Vaynberg, G. S., Eng.

Title   : Selection of dimensions of the induction coils and of
                 the charge of a coreless electric induction furnace

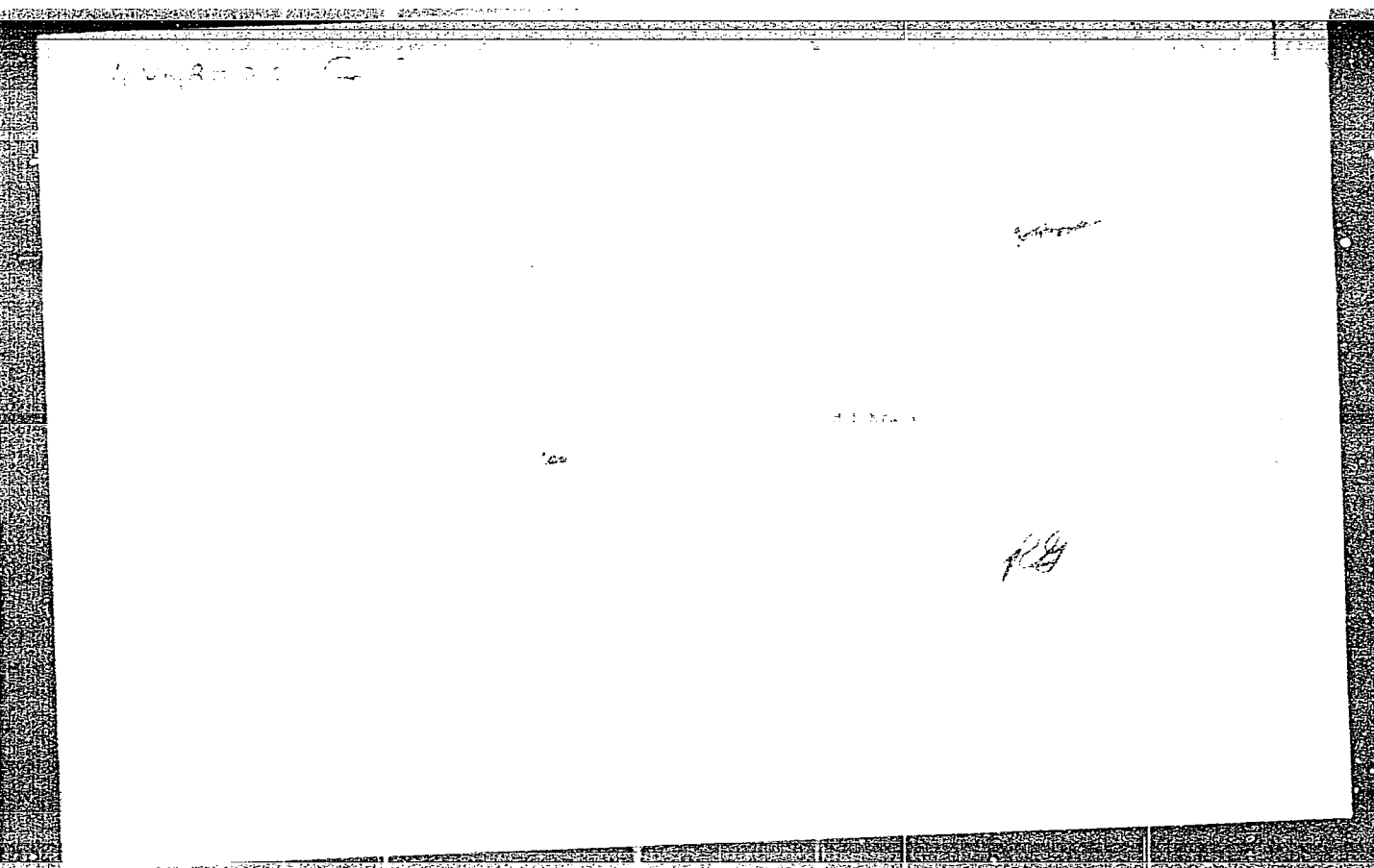Periodical   : Elektrichestvo, 10, 29-32, 0 1954

Abstract   : A relation is established between geometric dimensions of
                 the steel melting induction furnaces of 75 to 1200 kg
                 capacity and the electric efficiency of these furnaces.
                 The author determines the optimal ratio. Six diagrams,
                 2 references (1948, 1950).

Institution : Trust "Elektropech'"

Submitted   : Ap 22, 1954

PETROV, A.K.; SPERANSKIY, V.G.; KHIZHNICHENKO, A.M.; SHILYAYEV, B.A.;
DANILOV, A.K.; BORODULIN, G.M.; ZAMOTAYEV, S.P.; MARKARYANTS, A.A.;
SOLNTSEV, P.I.; SMIRNOV, Yu.D.; VAYNBERG, G.S.; OKOROKOV, N.V.;
KOLOSOV, M.I.; SEL'KIN, G.S.; MEDOVAR, B.I.; LATASH, Yu.B.;
YEFROYMOVICH, Yu.Ye.; VINOGRADOV, V.M.; SVEDE-SHVETS, N.N.;
SKOROKHOD, S.D.; KATSEVICH, L.S.; SHTROMBERG, Ya.A.; MIKHAYLOV,
O.A.; PATON, B.Ye.

Reports (brief annotations). Biul. TSNIIGHM no.18/19:67-68 '57.
(MIRA 11:4)

1. Zavod Dneprospetsstal' (for Speranskiy, Borodulin). 2. Chelyabin-
skiy metallurgicheskiy zavod (for Khizhnichenko). 3. Uralmashzavod
(for Zamotayev). 4. Trest "Elektropech'" (for Vaynberg). 5. Moskov-
skiy institut stali (for Okorokov). 6. TSentral'nyy nauchno-issledo-
vatel'skiy institut chernoy metallurgii (for Sel'kin, Svede-Shvets).
7. Institut elektrosvarki AN USSR (for Paton, Medovar, Latash).
8. TSentral'naya laboratoriya avtomatiki (for Yefroymovich,
Vinogradov). 9. Gisogneupor (for Skorokhod). 10. Trest "Elektropech'"
(for Katsevich). 11. Tbilisskiy nauchno-issledovatel'skiy institut
okhrany truda Vsesoyuznogo tsentral'nogo soveta profsoyuzov (for
Shtromberg).

(Steel--Metallurgy)

137-58-6-11789

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 84 (USSR)

AUTHOR: Vaynberg, G.S.

TITLE: The Design of Vacuum Induction Furnaces for the Smelting of
Steel and Special Alloys (Konstruktsiya induktsionnykh vaku-
umnykh elektropechey dlya vyplavki stali i spetsial'nykh spla-
vov)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1957, Vol
18, pp 592-599

ABSTRACT: The Special-designs Office of the Eletropech' Trust has de-
veloped, during the past few years, designs of vacuum furn-
aces of 1 kg to 3 t capacity. Furnaces of up to 150-kg capacity
have been developed for batch operation, furnaces of 0.5, 1 and
3 t for semi-continuous operation. The design and operation of
furnaces with an inductor in the vacuum chamber has resulted
in the development of a dependable insulating material permit-
ting operation at inductor potentials of up to 1000 v, electrical
heating for the hot top to reduce the shrinkage cavity in the in-
got, a screw-in gland-type 500-mm seal, a device for taking
samples without interfering with the vacuum, and designs for

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137-58-6-11789

The Design of Vacuum (cont.)

metering units, valves, and other parts Following are the major consider-
ations underlying the design of the 0 5, 1 0, and 3.0-t electric furnaces: the
possibility of semi-continuous operation, a melting chamber vacuum of
10^{-2}-10^{-3} mm Hg, which is attained by installing booster pumps having
capacities of from 4500 liters/sec (0.5-ton furnace) to 15,000 liters/sec
(3-ton furnace) and the required preliminary-evacuation pumps, the prob-
lems involved in handling slag, and the possible requirement of making
shaped castings. Furnaces with inductors outside the vacuum space are
made for laboratory work.

V.B.

1. Vacuum furnaces--Design   2. Induction heating--Applications   3. Steel--Production
4. Alloys--Production

Card 2/2

VAYNBERG, G.S., inzh. (Moskva).

Theory of apparatus for electromagnetic stirring of metal in arc
furnaces. Elektrichestvo no.2:40-46 F '58.   (MIRA 11:2)
                              (Electric furnaces)

AUTHOR: Vaynberg, G. S., Engineer (Moscow)   105-58-5-5/28

TITLE: On Selecting the Frequency of Devices for the
               Electromagnetical Mixing of Metal in an Electric
               Furnace (O vybore chastoty ustroystv dlya elektromagnitnogo
               peremeshivaniya metalla v elektropechi)

PERIODICAL: Elektrichestvo, 1958, Nr 5, pp. 20-24 (USSR)

ABSTRACT: Vising the same simplifications as in Reference 1, here
               the problem of connection between the current frequency
               and the magnitude of power and moment which is transmitted
               to the molten metal, as well as in consequence of that,
               the problem of rational selection of current frequency,
               are investigated. From the here derived formulae (3) to
               (7), and from the here given curves and reflections the
               following is determined: 1) In frequency variation the
               greatest moment transmitted to the molten metal is
               produced during operation with mean frequencies between
               5 to 10 cycles dependent on the dimensions of the
               furnace (highest frequency in smallest furnaces). 2) The
               magnitude of moment, referred to 1 cm^2 of the stator,

Card 1/3

On Selecting the Frequency of Devices for the   105-58-5-5/28
Electromagnetical Mixing of Metal in an Electric Furnace

surface or of the molten metal increases according to the
increase of magnetic induction and of the pole pitch. In
the second paragraph the mixing speed of the molten metal
and the magnitude of moment are investigated in the case
of frequency variation. Although in the analytical way
both of them can difficulty be determined, here the work
of the devices for electromagnetical mixing is analytically
investigated only based on the mentioned deductions,
which result from solving the equations for the electro-
magnetic field of the device. It is shown that for the
purpose of increasing the speed of metal that frequency
is to be selected, at which the moment variation in
raising the speed is unimportant, however, the magnitude
of moment is greatest. The statements are illustrated
by an example. It is shown that with industrial frequency
the moment is practically by the 1,5- to 2-fold smaller
than in the case of the most advantageous frequency
calculated according to the formula (6). Summarizingly it
is stated: 1) The most rational performance of these
Card 2/3   devices are those with the frequency of from 5 to 10

On Selecting the Frequency of Devices for the   105-58-5-5/28
Electromagnetical Mixing of Metal in an Electric Furnace

cycles with an induction as high as possible on the
stator surface. Here the greatest moment is transmitted
to the molten metal. 2) When the mixing devices have
industrial frequency and their induction on the stator
surface is as high as possible the moment decreases
almost by half its   value. 3) When the devices have
frequencies of from 0,5 to 1 cycle the magnitude of
moment decreases relatively little (by 20 - 30%),
however, the transformation equipment becomes more
complicated. There are 3 figures and 2 references,
which are Soviet.

SUBMITTED: July 13, 1957

AVAILABLE: Library of Congress

                1. Electric furnaces--Operation   2. Metals--Processing
                3. Electromagnetic equipment--Applications   4. Frequency
Card 3/3   --Selection

VAYNBERG, G.Ya.

New Trend in the Practice of Determining Oxygen in Alloy Steels.
G. Ya. Vaynberg. (Zavodskaya Laboratoriya, 1940, No. 1, pp. 23-26). (In Russian). The author's preliminary experiments in his investigation of methods of determining oxygen in alloy steels showed that all the metallic oxides which may be present in alloy steels can be completely, or almost completely, reduced with hydrogen at a temperature of 1250° C., heating being continued for at least 1½ hr. The treatment was carried out in the presence of a " flux " consisting of a one-to-five mixture of tin and antimony in powder form. His subsequent experiments demonstrated that, to obtain consistent results, samples of the steel to be analysed should be massive and should have a regular geometrical shape, preferably cylindrical. This eliminates errors which may be caused by variable amounts of surface oxygen in the case of comminuted samples. A number of experiments showed the applicability of the method to low- and high-alloy steels.

VAYNBERG, I.A.

Cesarean section by Doerfler's technique with L.A. Gusakov's modification. Akush. i gin. 39 no.5:142-143 S-O '63.
(MIRA 17:8)

1. Iz akushersko-ginekologicheskogo otdeleniya (nachal'nik I.A. Vaynberg) Artemovskoy zheleznodorozhnoy bol'nitsy (nachal'-nik L.M. Zekhov) Donetskoy zheleznoy dorogi.

VAYNBERG, I.A.

Rare combination of ectopic pregnancy and ovarian cancer.
Akush. i gin. 34 no.5:112-113 S-O '58   (MIRA 11:10)

1. Iz ginekologicheskogo otdeleniya (nach. I.A. Vaynberg)
Ilovayskoy zheleznodorozhnoy bol'nitsy (nach. L.L. Cherenkova)
Donetskoy zheleznoy dorogi.
          (PREGNANCY, EXTRAUTERINE)
          (OVARIES--CANCER)

LOPATINSKIY, V.B.; VAYNBERG, I.A.

Tetanus in a 38-week pregnancy. Akush. i gin. 35 no.3:116-117
My-Je '59.   (MIRA 12:8)

1. Iz khirurgicheskogo otdeleniya (zav. V.B.Lopatinskiy) bol'-
nitsy (nach. L.L.Cherenkova) stantsii Ilovayskoye Donetskoy
zheleznoy dorogi.
          (PREGNANCY, compl.
                tetanus in 38-week pregn. (Rus))
          (TETANUS, in pregn.
                in 38 week pregn. (Rus))

BELOZERSKIY, S.S., inzh.; VAYNBERG, I.B., inzh.; SOKOLIN, G.F., inzh.;
          DAVYDENKOV, A.K., inzh.

    Using chromatographs. Mekh. i avtom. proizv. 19 no.4:41-42
                                            (MIRA 18:6)
    Ap '65.

34781
S/118/62/000/003/004/005
D221/D302

5. 1500 (also 5419)

AUTHORS: Vaynberg, I.B., and Sokolin, Sh.L., Engineers

TITLE: Instruments for the automation of oil refineries

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 3, 1962, 37 - 40

TEXT: The special design office for automation of oil refining has developed several special instruments. The ДП-320 (DP-320) transducer measures pressure drop up to 50 kg/cm^2 with a static pressure of >20 kg/cm^2. Use of thick-walled diaphragms permits measurement of pressure drop in gases with a high content of hydrogen. The transducer operates on the principle of force compensation. The transducer ДИУУ (DIUU) is applied for measuring liquid levels at pressures of 320 and 700 kg/cm^2. It is formed by a chamber with a weight suspended on a spring. The weight carries a core travelling in a nonmagnetic austenitic steel sleeve. The level difference produces a shift of core in respect of the induction coil. For remote control of liquid level the electric indicator УЭД-2 (UED-2) is

Card 1/3

Instruments for the automation of ...   S/118/62/000/003/004/005
                                          D221/D302

used which operates at atmospheric or low (up to 6 kg/cm^2) pressu-
res and in vacuum. Its operation is based on the servo-system. The
float actuates a reversible motor which rotates the drive roller,
drum of the level counter and the rotation of the transmitting sel-
syn. The unit is made in an explosion-proof design. The level indi-
cator УЭД-3 (UED-3) with a coded telemetering system can be con-
nected to 99 points by a selector switch. The main design is simi-
lar to UED-2. A prototype series of these instruments is installed
in storage compounds at the Novourimsk and Odessa refineries. The
flowmeter for remote indications is particularly suitable for li-
quid naphtalene at 120°C. The transducer coil is placed inside the
flow, and connected to a differential transformer instrument. The
unit comprises an amplifier and a mechanism with a reversible mo-
tor actuating the core of the indicating and recording coils. The
amplified voltage is proportional to the displacement of the core,
whereas its phase is a function of core travel from its mean posi-
tion. The meter is provided with a steam jacket to prevent the cry-
stallization of the product. The valve КВ (KV) for viscous media
has an angular shape and contains a single poppet. The liquid flow

Card 2/3

Instruments for the automation of ...   S/118/62/000/003/004/005
D221/D302

ensures the balance of the valve as well as the cleaning of the
chambers. The flow is proportional to the plunger motion. The dis-
placement of the valve depends on the change of pressure in the
bellows of the position relay. The use of these valves at Moscow
oil refinery ensured the automatic control of the level of the crac-
king residue. There are 5 figures.

Card 3/3

VAYNBERG, I.M.

Piston Rings

Ways of increasing the durability of chromiumplated piston rings, Vest. mash.,

$\frac{1}{2}$ 32, no. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, Unclassified, October 1952

VAYNBERG, I. S.

Data on the semeiology of disorders in the hypothalmus region

Leningrad, GIDUV, 1940.   215 p.

VAYNBERG, L. I.

Peritonitis

Rheumatoid myositis as a cause of diagnostic error in acute peritonitis. Khirurgiia no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, ___August___ 195X. Unclassified.
2

VAYNBERG, L.I., kand.med.nauk

Epidermoid cysts of the sacrococcygeal region. Khirurgiia 34 no.8
136-139 Ag '58
(MRA 11:9)

1. Iz kliniki khirurgii detskogo vozrasta (zav. - prof. A.P. Shurinok)
Kiyevskogo ordena trudovogo Krasnogo Znameni meditsinskogo instituta
imeni akad. A.A. Bogomol'tsa (dir. - dots. I.P. Alekseyenko) i
khirurgicheskogo otdeleniya bol'nitsy imeni M.I. Kalinina (glavnyy
vrach V.A. Udintseva).
            (SACROCOCCYGEAL REGION, cysts
                epidermoid (Rus))

VAYNBERG, M., kand.tekhn.nauk.

Arranging apartment house facilities. Zhil.-kom. khoz. 8 no.2:5-6
'58.   (MIRA 11:2)
                    (Apartment houses)

GERSHKOVICH, Zh.[Herscovici, G.]; DUVALMA, M.; MEROIU, Ye.[Meroiu, E.];
SMORZHEVSKAYA, M.; VAYNBERG, M.; KORLETYANU, Ye.[Corleteanu, E.]

Preparation of isoprene from dimethyldioxane. Part 1: Role of
a catalyst and of a carrier. Zhur. ob. khim. 32 no.12:3987-3990
D '62.
(MIRA 16:1)

1. Khimicheskiy issledovatel'skiy institut, Bukharest.

(Isoprene)   (Dioxane)   (Catalysts)

GERSHKOVICH, Zh.[Herscovici, G.]; DUVALMA, M.; MEROYU, Ye.[Meroiu, E.];
    SFINTSESKU, K.[Sfintescu, C.]; KORLETYANU, Ye.[Corleteanu, E.];
    VAYNBERG, M.; SMORZHEVSKAYA, M.

Preparation of isoprene from dimethyldioxane. Part 3:Acidity
and activity of a cracking catalyst. Zhur. ob. khim. 32 no.12:
3992-3997 D '62.   (MIRA 16:1)

1. Khimicheskiy issledovatel'skiy institut, Bukharest.

        (Isoprene)   (Dioxane)   (Catalysts)

VAYNBERG, M., kand. tekhn. nauk; KRASHENINNIKOVA, Ye., kand.
arkhitektury

Practices in determining the most economical number of
stories for buildings. Zhil. stroi. no.10:19-23 '64. (MIRA 18:4)

BRENMAN, A.; GERSHKOVICH, Zh.; GERTSOG, A.M.; VAYNBERG, M.

Formation of the catalyst under conditions of the hydroformylation
reaction. Zhur. prikl. khim. 34 no.2:454-455 F '61. (MIRA 14:2)

1. Khimicheskiy issledovatel'skiy institut, Bukharest.
            (Oxo process)   (Cobalt carbonyl)

VAYNBERG, M.

Telecommunication

Results of creative cooperation, Sov. sviaz. No. 2, 1953.

9. **Monthly List of Russian Accessions**, Library of Congress, ___May___ 1953. Unclassified.

AYZENGENDLER, P.G.; VAYNBERG, M.M.

Theory of branching of solutions to nonlinear equations in the
multidimensional case. Dokl. AN SSSR 163 no.3:543-546 Jl '65.
(MIRA 18:7)

1. Moskovskiy oblastnoy pedagogicheskiy institut im. N.K.Krupskoy.
Submitted March 19, 1965.

VAYNBERG, M., kand.tekhn.nauk

Introduction of progressive city-cleaning methods in Kuybyshev.
Zhil.-kom. khoz. 10 no.10:12-13 '60.   (MIRA 13:10)
        (Kuybyshev--Refuse and refuse disposal)

GULYAYEV, N., kand.tekhn.nauk; VAYNBERG, M., kand.tekhn.nauk

Constructing refuse-sorting plants. Zhil.-kom.khoz. 9
no.11:13-14 '59.   (MIRA 13:2)
        (Refuse and refuse disposal)

VAYNBERG, M.

The institute renders assistance to the industry. Radio no.2:10
F '62.   (MIRA 15:1)
                        (Telecommunication)

S/079/62/032/012/004/008
D424/D307

AUTHORS: Gershkovich, Zh., Duvalma, M., Meruyu, Ye., Smorzh-
                evskaya, M., Vaynberg, M, and Korletyanu, Ye.

TITLE: Production of isoprene from dimethyldioxan. I. The
                role of catalyst and support

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 12, 1962,
                3987-3990

TEXT: In connection with work carried out at the authors'
Institute in Bucharest on the production of isoprene from isobuty-
lene and formaldehyde via 4,4-dimethyl-1,3-dioxan (DMD), the effect
of the composition of the catalyst for the vapor-phase conversion
of DMD to isoprene on its selectivity, isomerizing effect, etc. has
been studied. Standard conditions found to be optimal in prelimin-
ary experiments were used, namely: 270°C and a space velocity of
feed of DMD of 0.4 hr^{-1}. The highest activity was possessed by a
catalyst consisting of acid calcium phosphate on a silica/5% alumina
support, the nature of the support being important. With this cata-

Card 1/2

S/079/62/032/012/004/008
D424/D307

Production of isoprene ...

lyst, the selectivity fell as the temperature was increased from 150 to 350°C but the maximum total conversion (~ 65%) was obtained at ~ 300°C, the selectivity then being of the order of 85%. By-products found (by gas chromatography) included isobutylene, 2-meth-ylbut-2-ene, methyldihydropyran, 2-methylbutan-1-ol, isovaleralde-hyde, and dimers and trimers of isoprene. The fact that the support alone had a small catalytic activity due to its Lewis acid sites and leading mainly to isobutylene is considered to show that the activity of the calcium phosphate catalyst depends on the presence of Brönsted acid sites. The catalyst is not appreciably affected by the usual impurities in DMD but is poisoned by sulfur (mercap-tans). It can also be used for the production of other dienes, e.g. 2-phenylbutadiene, by analogous reactions. There are 5 figures.

ASSOCIATION: Khimicheskiy issledovatel'skiy institut, Bucharest
                (Chemical Research Institute, Bucharest)

SUBMITTED: February 24, 1961

Card 2/2

VAYNBERG, M., kand.tekhn.nauk; LAKHTIN, V., kand. arkhitektury

Evaluation of methods of distribution housing construction. Zhil.
stroi. no.12:2-3 '61. (MIRA 15:2)
(Chelyabinsk--Construction industry) (Apartment houses)

1. C:

VAYNBERG, M. M.

O regulyornoy zamknutosti toplogicheskikh prostranstv. DAN, 31 (1941), 523-524.

SO: Mathematics in the USSR, 1917-1947
        edited by Kurosh, A.G.,
        Markushevich, A.I.,
        Rashevskiy, P.K.
    Moscow-Leningrad, 1948

VAYNBERG, M. M.

Sushchestvovaniye sobstvennoy funktsii u odnogo klassa nelineynykh intorral'nykh uravneniy. DAN, 46 (1945), 51-54.

SO: Mathematics in the USSR, 1917-1947
          edited by Kurosh, A.G.,
          Markushevich, A.I.,
          Rashevskiy, P.K.
     Moscow-Leningrad, 1948

VAYNBERG, M.M.

Veinberg M. M.   On the characteristic values of a class of

$$\ldots \mu_x = \int^x \ldots \gamma_x \ldots y \, d_7$$

. $f_x(0)$ = 0 for x in the bounded domain R in Euclidean

VAYNBERG, M. M.

$u = (u_1, \cdots, u_n)$, $g_i(u,x) = (\partial/\partial u_i)G(u,x)$, $g_i(0,x) = G(u,x) = 0$, B is a bounded domain in a Euclidean space. The set of

solution it is proved that
tions of (1), tending to 0, if the A, x, y, are symmetric, positive, bounded, measurable, while the real functions of real arguments $g_i(u, y)$ are (in a neighborhood of $u = 0$) measurable over B in y, continuous in u and $|g_i(u, y)| \leq v_i(y)$.

where u, y, are also proved that there exists a system of solutions of (1), tending to 0 (according to the normal $A(x, y)$ are positive, symmetric, while the real g, u

Source: Mathematical Reviews,   Vol 10 No. 7

VAYNBERG, M. M.

$$(1) \qquad \mu_i u_i(x) = \int_{B} K_i(x, y) g_i(u_1(y), \cdots, u_n(y), y) dy$$

belong to L ... the ... g ... atisfies ... λ? or $\cdots$ continuous in $(u_1, \cdots, u_n)$, is measurable in x (in B) and satisfies $\cdots$ ...

VAYNBERG, M. M.

21325   VAYNBERG, M. M. K voprosu O sushestuouanii resheniy u odnogo klassa
nedineynykh integral'nykh uravneniy. Trudy Gos. Okeanogr, IN-TA, Vyp. II,
1949, S. 61-70 - Bibliogr: S. 70.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.

Vainberg, M. M. Existence theorems for the characteristic values of systems of nonlinear integral equations. Mat. Sbornik N.S. 20(62), 305–394 (Russian)

The author studies the system

$$(1) \qquad \mu u_i(x) = \int_B K_i(x, y) g_i(u_i(y)) \, dy, \quad i = 1, \ldots, n;$$

the kernels $K_i(x, y)$ are symmetric, positive; the $g_i(u, x)$ are continuous in u, for x fixed in the bounded domain (in m-space E_m) and g_i measurable in x (in B) for u fixed, and g_i satisfies $g_i(0, x) = G(0, x) = 0$. The function

$$\psi(x) = \psi(u, x), \quad \psi(0) = 0;$$

and of nonzero norm is termed a c.v. (characteristic value) of (1) if ψ satisfies (1) for some μ. ... not which (1) has a c.v. ... Under ... hypotheses on K_i and g_i, it is shown that there exists a denumerable infinity of c.v.'s of ... theorem asserts that, if the aggregate ... defines a continuous operator hu in $L_{2,n}(B)$, and

$$0 < \int\int K_i(x, y) g_i(x, y) \, dx \, dy,$$

then (1) has at least a denumerable infinity of $L_{2,n}(B)$, tending to zero according to norm ... continuity of the operator hu are examined in ... The case of bounded kernels is also considered.

W. J. Trjitzinsky (Urbana)

Source: Mathematical Reviews.

Vol 13 No 6.

VAYNBERG, M. M.

Vainberg, M. M. On the continuity of some operators of
special type. Doklady Akad. Nauk SSSR (N.S.) 73,
253-255 (1950). (Russian)

Let $f(u, x)$ be defined for u real and for $x \in B$, a measurable
subset of Euclidean n-space, and assume f is continuous for
x fixed, and measurable for u fixed. If $u(x)$ is defined on B,   theorem on integral equations. Assume (1) the function

represent a vector ...

Source: Mathematical Reviews,   Vol 1 . No. 2 .

VAYNBERG, M.M.

Vainberg, M. M. On the characteristic elements of a class of nonlinear operators. Doklady Akad. Nauk SSSR (N.S.) 75, 671 (1950). (Russian)

The methods of the proofs are variation-topological; the terminology is that of Nauk no. 1, 141–174 (1936)].

(I) Is generated by $df(x, h) = (F(x), h)$ $f(x)$ is w.c. (weakly continuous), is necessary and sufficient that $f(x, c)$ a bounded remainder.

(Fréchet) Consider is w.c. and has for $\|x\| = 0$ implies $x = 0$ (with $f(x) = 0$ by a differential (of f), is complete while $\|f(x)\| = 0$ implies $x = 0$.

(II) Under equation $F(x) = \lambda x$ has in every sphere a denumerable infinity of geometrically distinct elements. Other conditions:

(3) The symmetric generate kernel $K(x, y) \epsilon L_2$ (in (x, y)) has characteristic values; (4) $g(u, x)$, with $g(u, x)$ continuous for real u for $x \epsilon B$ (B a bounded measurable in B in x, for u fixed μ and (for $u \neq 0$) $g(u, x) \neq 0$ almost under (3). (4) the equation $\mu(x) = 0$ has for $0 < r \leq a$ at least a denumerable characteristic functions in L_2; their explicit ...

W. J. Trjitzinsky.

Source: Mathematical Reviews,   Vol 12 No. 9.

VAINBERG, M. M.

USSR/Mathematics - Functionals   11 Jun 51

"Weak Continuity of Functionals and Their Gra-
dient," M. M. Vaynberg, Moscow Oblast Pedagogic
Inst

"Dok Ak Nauk SSSR" Vol LXXVIII No 5, pp 841-844

Properties of functionals (min, max, and points
of minimax) and their gradients are important in
quant investigation of variational problems in
infinite spaces, studied by E. S. Tsitlanadze
("Dok Ak Nauk SSSR" Vol LIII, No 4, 1946). Prob-
lem discussed here was first brought up by L. A.
Lyusternik in connection with the works of

184T69

USSR/Mathematics - Functionals (Contd)   11 Jun 51

Tsitlanadze. Problem proposed is: Of what sort is
the class of nonlinear operators for which weak
continuity follows from complete continuity? Sub-
mitted by Acad S. L. Sobolev 17 Apr 51.

184T69

184T69

184T77

USSR/Mathematics - Nonlinear Integral   21 Jun 51
                      Equations

"Existence of Eigenfunctions Among Nonlinear Inte-
gral Equations With Nonpositive Kernels," M. M.
Vaynberg, Moscow Oblast Pedagogic Inst

"Dok Ak Nauk SSSR" Vol LXXVIII, No 6, pp 1077-1080

Shows variational method can be modified so that it
encompasses even certain classes with nonpos ker-
nels -- where eigenvalues of the kernel $K(x,y)$ pos-
sess finite number of positives. Cf. Lichtenstein,
"Vorlesungen uber einige Klassen nichtlinearer In-
tergralgleichungen," 1931, pp 140-156. Submitted
20 Apr 51 by Acad S. L. Sobolev.
                                       184T77

Yakubович, М. М.   On the variational theory of character...   Доклады

VAYNBERG, M. M.

On the question of variation theory of the Eigen values for non-linear integral equations, by M. M. VAYNBERG. Uspechi mat. Nauk 7, No. 1 (47), 144-146 (1952).

VAYNBERG, M.M.

Vainberg, M. M. On some variational principles in the theory of operator equations. Uspehi Matem. Nauk (N.S.) 7, no. 2(48), 197–200 (1952). (Russian) The author observes that a theorem of Lyusternik [Mat. Sbornik 41, 390–401 (1934)] implies the following result of Golomb [Math. Z. 39, 45–75 (1934)]: If in a real Hilbert space H there is given an operator $F(x) = \mathrm{grad}\, f(x)$ and also a completely continuous self-adjoint operator Ax; then the equation $\mu x = A^2 F(x)$ has at least two different solutions in each sphere $\|x\| \leqq r$, corresponding to real eigen-values μ. He also deduces connections with the work of Rothe [Ann. of Math. 49, 265–278 (1948); these Rev. 10, 461].

J. M. Danskin (Santa Monica, Calif.).

VAYNBERG, M. M.

USSR/Mathematics - Functionals   May/Jun 52

"The Differential and Gradient of Functionals,"
M. M. Vaynberg

"Uspekh Matemat Nauk" Vol VII, No 3 (49), pp 139-143

Investigates for functionals the problem concerning
the linearity of Gateaux' differential and gives the
necessary conditions that Gateaux' differential be
also Frechet's differential, such investigation per-
mitting one to introduce the concept of the gradient
of a functional not from Frechet's but Gateaux' dif-
ferential, which is an advantage since Gateaux' lin-
ear differential can exist even when Frechet's can-
not; in this case the demonstration of existence and

USSR/Mathematics - Functionals (Contd) May/Jun 52

the direct calcn is easier than in Frechet's case.
The results obtained here show that all previous
results of the author are preserved if the gradient
concept proceeds from Gateaux'. Submitted 4 Feb 52.

218T70

218T70

VAYNBERG, M. M.

USSR/Mathematics - Linear Spaces, Differ-   Jul/Aug 52
            ential Calculus

"Certain Problems of the Differential Calculus in Linear Spaces," M. M. Vaynberg

"Uspekh Matemat Nauk" Vol VII, No 4 (50), pp 55-102

Discusses continuous operators and functionals; differential, deriv and gradient of a functional; potential operators; and examples of a potential operator operating from a space L_p to space L_q (where $p+q = pq$). Cites M. K. Gavurin, V. R. Gantmakher, V. L. Shmul'yan, M. A. Krasnosel'skiy, M. Lavrent'yev, L. Lyusternik, Zh. Lerey, Yu. Shauder, V. I. Sobolev, I. P. Natanson, G. A. Sukhomlinov, and E. S. Tsitlanadze in similar works.

225T58

VAYNBERG, M. M.

USSR/Mathematics - Nonlinear Integral   Jan/Feb 52
Equations, Eigenvalues

"Contribution to the Problem Concerning the Variational Theory of Eigenvalues for Nonlinear Integral Equations," M. M. Vaynberg, Moscow

"Matemat Sbor" Vol XXX (72), No 1, pp 3-10

Supplements results obtained earlier by Vaynberg ("Theorems Governing the Existence of Eigenvalues for One Class of Systems of Nonlinear Integral Equations," Ibid. Vol XXVI, (68), 1950, 365-394). Indicates another method for solving the problem concerning eigenvalues for nonlinear integral eqs.

USSR/Mathematics - Nonlinear Integral   Jan/Feb 52
Equations, Eigenvalues (Contd)

Considers weak continuity of functionals f(x), differentiability of functionals f(x), existence of eigenvalues, etc. Cf. E. H. Rothe, "Completely Continuous Scalars and Variational Methods," Annals of Math, 49, No 2, 1948, 265-278. Submitted 15 Nov 1950.

203T41

VAYNBERG, M. M.

USSR/Mathematics - Modern Algebra, Banach   21 Apr 52
Space

"Fixed (Immovable) Directions of Certain Completely
Continuous Operators," M. M. Vaynberg

"Dok Ak Nauk SSSR" Vol LXXXIII, No 6, pp 785-788

Gives another method for demonstrating the exis-
tence of fixed directions which uses topological
methods of functional analysis and which is appli-
cable for a wide class of infinite-dimensional
spaces (spaces of the Banach type), whose separab-
leness is not assumed. Submitted by Acad S. L.
Sobolev 27 Feb 52.

223T63

VAYNBERG, M. M.

"Fixed Directions of Products of Certain Operators," Dokl. AN SSSR, 85, No.2,
pp 261-3, 1952

Author establishes, by a variational method, the existence of fixed directions
of operators of the form (BF(x), where B is a self-adjoint completely continuous
operator acting in a real Hilbert space H and F is a potential operator given in H.
An operator operating from a Banach space E on adjoint space E is called potential
if it is the gradient of a certain functional assigned in E. Presented by Acad.
S. L. Sobolev 24 Apr 52.

252T62

1. VAYNBERG, M.M.

2. USSR (600)

4. Eigenfunctions

7. Existence of eigenfunctions in non-linear integral operators with non-positive kernels and in the product of a self-conjugate and potential operator, M.M. Vaynberg, Mat. sbor. 32 no. 3, 1953.

Demonstrates a theorem on the existence of solutions of the operator eq x-BF(x), Gives a complete exposition of results which were only briefly expounded by the author in two short reports ("Existence of Eigenfunctions of Non-linear Integral Equations with Nonpositive Kernels," Dokl. AN SSSR, 78, No.6, pp 1077-1089, 1951; and "Variational Theory of Eigenvalues of Nonlinear Integral Equations," ibid., 80, No.3, pp 309-311, 1951). Submitted 14 Jul 52.

250T8

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

VAYNBERG, M. M.

USSR/Mathematics - Nonlinear Integrals   11 Sep 53

"The Structure of a Certain Operator," M. M. Vayn-
berg

DAN SSSR, Vol 92, No 2, pp 213-216

Considers the problem of whether a given operator
h generated by a real function f(u,x) depends upon
the structural properties of f(u,x), where f(u,x)
is defined for all real u and for all x in the
measurable set B of Euclidean space s of dimensions
by the equality hu=f(u(x),x). Notes that h was
studied earlier by V. V. Nemytskiy (Matem Sbor. 41,

269T74

438 (1934)), by the author in 1949, and by M. A.
Krasnosel'skiy (Ukrain Matem Zhurn. 2, No 3, 1951).
Completes the investigation of the continuity of h
for an extensive class of functional spaces, and
shows that the necessary and sufficient criterion
of continuity. Presented by Acad S. L. Sobolev
13 Jul 53.

Vainberg, M. M. On solvability of certain operator equations. Doklady Akad. Nauk SSSR (N.S.) 92, 457–460 (1953). (Russian)

The author continues his earlier work on non-linear equations [same Doklady (N.S.) 73, 253–255 (1950); 92, 213–216 (1953); Uspehi Matem. Nauk (N.S.) 7, no. 4(50), 55–102 (1952); these Rev. 12, 111; 15, 439; 14, 384]. The principal results are the following. Theorem 1. In a real Hilbert space H let B be a positive, self-conjugate linear operator and let $F(x) = \mathrm{grad}\, f(x)$, where f satisfies the condition $2f(x) \leq a_1(x, x) + a_2(x, x)^\gamma + a_3$, where a_2 and a_3 are positive numbers, $0 < \gamma < 1$, and $0 < a_1\|B\| < 1$. Suppose further that (a) f is continuous and B is compact or (b) f is weakly upper semi-continuous. Then the equation $x = BF(x)$ has a solution. Theorem 2. Suppose: (1) B is self-conjugate in H, the positive part of the spectrum of B is in an interval (m, n), $m > 0$, and the range of $E_n - E_m$ is finite-dimensional, where $\{E_t\}$ is the spectral resolution of B; (2) $F(x) = \mathrm{grad}\, f(x)$, where $f(x) \geq (x, x)/m + a_2(x, x)^\gamma + a_3$, where a_1 and a_3 are positive numbers and $0 < \gamma < 1$; and (3) (a) above or (b') f is weakly lower semicontinuous. Then $x = BF(x)$ has a solution. An application to non-linear integral equations is discussed in which are needed results of the first references above. *M. M. Day* (Urbana, Ill.).

VAINBERG, M. M. --

"Potential Operators and the Variational Theory of Non-linear Operator Equations." Dr Phys-Math Sci, Moscow Order of Lenin State U imeni M. V. Lomonosov, 12 Nov 54. (VM, 28 Oct 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

SO: Sum. No. 481, 5 May 55

VAINBERG, M.M.

Variational theory of eigenfunctions of nonlinear integral and
other operators. Trudy Mosk.mat.ob-va 3:375-406 '54. (MIRA 7:7)
(Eigenfunctions) (Operators (Mathematics)) (Integral equa-
tions)

VAYNBERG, M. M.

USSR /Mathematics - Nonlinear Operators

Card 1/1

Author   : Vaynberg, M. M.

Title   : Hyperboloids and the conditional extremum of certain functionals in Hilbert space

Periodical : Usp. mat. nauk, 9, No 2(60), 105-112, 1954

Abstract   : In the investigation of certain problems of the theory of nonlinear operator equations it is necessary to find the sufficient conditions for the existence of the conditional extremum of the functional $\phi(x) = f(Ax)$, where $f(x)$ is a differentiable functional and A is linear operator in a real Hilbert space H. Here the author gives the sufficient conditions for the existence of the conditional extremum of functional $\phi(x)$ relative unbounded manifolds, hyperboloids generated by A. These concepts, to which certain problems of nonlinear analysis reduce, are also connected with the investigations of L. S. Pontryagin, M. G. Kreyn, M. A. Rutman, and I. S. Iokhviodov.

Submitted   : April 1, 1953

VAYNBERG, M.M.

Vainberg, M. M. Topological methods of investigation of a problem on eigenfunctions of nonlinear integral equations. Moskov Oblast Pedagog Inst Uč Zap. Trudy Kafedr Mat 20 (1954) 37 57 (Russian)

This paper deals with the existence of nontrivial solutions for

(1) $$u(x) = \lambda \int_B \cdots \int_B K(x; y_1, y_2, \cdots, y_n)$$
$$\times g(u(y_1), \cdots, u(y_n); y_1, \cdots, y_n) dy_1 \cdots dy_n$$

and similar equations when $g(0, \cdots, 0; y_1, \cdots, y_n) = 0$.

was proved by Krein ..... If the completely continuous operator $F(x)$ with domain and range in the cone K of a Banach space satisfies $F(x) \geq a > 0$ for $x \in K$ and $\|x\| = r$, then there exist $x_0 \in K$, $\|x_0\| = r$ and $\lambda_0 > 0$ such that $F(x_0) = \lambda_0 x_0$. By its use the existence of nontrivial solutions $u(x)$ of (1) in C, L_1 and $L_p (p > 1)$ is proved under various hypotheses on K and g. *M. Golomb* (Lafayette, Ind.).

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VAYNBERG, M.M

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(Sml) 1

VAYNBERG, M.M.

VAYNBERG, M.N.

Vainberg, M. N. Potential operators and the variational theory of nonlinear operator equations. Uspehi Mat. 1 - F/W
Nauk. ... /SS (Russian)
... The

Vaynberg, M. M.

USSR/ Mathematics - quadratic forms

Card 1/1   Pub. 22 - 1/49

Authors   : Vaynberg, M. M.

Title   : About some properties of the quadratic forms in the spaces L^q $(q \leq 2)$

Periodical : Dok. AN SSSR 100/5, 845-848, Feb 11, 1955

Abstract   : The quadratic form $J(u,u)$ of the L^q $(l < q)$ space is analyzed. Its properties are established (in three theorems and one lemma), especially those which may play an important role in the analysis of the operator A or the product of the operator A and the operator F. The operator A is a linear operator which transforms every limited set of the L^q space into a compact set of the L^p space $(p \geq 2, p^{-1} + q^{-1} = 1)$. The operator F is a non-linear potential operator acting from the space U in the space L^q. Seven USSR references (1941-1953).

Institution : Moscow Regional Pedagogical Institute

Presented by: Academician S. L. Sobolev, December 3, 1954

VAYNBERG, M.M. (Moskva)

On the eigen elements of odd potential operators in Hilbert space.
Mat.sbor. 38(80) no.1:3-22 Ja '56.   (MLRA 9:5)
(Spaces, Generalized) (Operators (Mathematics))(Eigenfunctions)

VAYNBERG, M.M.

Elementary proof of one Liusternik's theorem on hyperboloids
in Hilbert space. Uch. zap. MOPI 39 no.3:27-32 '56.   (MLRA 10:4)
        (Hyperboloid)   (Functional analysis)

VAYNBERG, M.M.

Gato's and Frechet's derivatives. Uch. zap. MOPI 39 no.3:33-50
'56.   (MLRA 10:4)

(Functional analysis)

VAYNBERG, M.M.

Correction of the article "Uryson's integral equation". Uch. zap.
MOPI 39 no.3:131-132 '56.   (MLRA 10:4)
                    (Integral equations)

VAYNBERG, M. M.

KOVNER, Semen Samsonovich, professor; GINZBURG, L.N., retsenzent; VAYNBERG,
M.M., retsenzent; ARKHANGEL'SKIY, S.S., redaktor; KOGAN, V.V.,
tekhnicheskiy redaktor

[Mathematical methods of studying the movement of fibers in the
process of drafting] Matematicheskie metody issledovaniia dvizheniia
volokon v protsesse vytiagivaniia. Moskva, Gos.n auchno-tekhn.
izd-vo lit-ry po legkoi promyshl., 1957. 279 p.   (MIRA 10:9)

1. Moskovskiy tekstil'nyy institut (for Kovner)
        (Spinning)

VAYNBERG, M.M.

SUBJECT	USSR/MATHEMATICS/Functional analysis	CARD 1/2 PG - 803
AUTHOR	VAINBERG M.M.	
TITLE	Some questions of functional analysis and variation methods for the investigation of non-linear equations.	
PERIODICAL	Uspechi mat.Nauk 12, 1, 162-165 (1957) reviewed 6/1957	

In a very indistinct manner the author gives some stange and partially well-known own results (Uspechi mat.Nauk 7, 4, 55-102 (1952)) on potential operators as auxiliary means for existence proofs for non-linear equations; e.g. in order that a potential operator being defined in the Banach space with a weakly compact sphere, maps every weakly convergent sequence into a strongly convergent sequence, it is necessary and sufficient that the operator is compact or uniformly continuous.

Furthermore the author formulates two theorems on conditionally critical points with respect to hyperboloids. A point x which belogs to the manifold $\varphi(x) = c = $ const is called a conditionally critical point of the functional $f(x)$ with respect to $\varphi(x) = c$ if

$$\text{grad } f(x_0) = \mu \text{grad } \varphi(x_0) \qquad \mu\text{- a certain number.}$$

If the real Hilbert space H is an orthogonal sum of the subspaces H_1 and H_2

and if P_1 and P_2 are projectors of H onto H_1 and H_2, respectively, then the manifold

$$(\| P_1 x \|^2 - \| P_2 x \|^2)^{1/2} = c > 0$$

is called a hyperboloid in H.

Theorem: Let $f(x)$ be a real functional in H and $f(x)$ be continuous in the zero of H. Let $F(x) = \mathrm{grad}\ f(x)$ and let it satisfy the following conditions:

1. In every point x of a sphere $D(\| x \| \leqslant a)$ let

$$(DF(x,h),h) \geqslant 0,$$

where $DF(x,h)$ is the linear differential of Gateaux.

2. For the points $x \in V_0 \cap D$ let

$$(DF(x,h),h) > 0,$$

where V_0 is the domain with $(\| P_1 x \|^2 - \| P_2 x \|^2)^{1/2} \geqslant 0.$

Then there exists an $r > 0$ such that on every hyperboloid with $c \leqslant r$ there lies at least one conditional extremal point of the functional $f(x)$.

VAYNBERG, M.M.

Positive solutions of certain nonlinear integral equations.
Uch. zap. MOPI 57 no.4:61-72 '57.   (MIRA 11:6)
                    (Integral equations)

AUTHOR: Vaynberg, M.M., Engel'son, Ya.L.(Moscow-Riga)   SOV/39-45-4-1/7

TITLE: On the Conditional Extremum of Functionals in Linear Topological Spaces (Ob uslovnom ekstremume funktsionalov v lineynykh topologicheskikh prostranstvakh)

PERIODICAL: Matematicheskiy sbornik, 1958, Vol 45, Nr 4, pp 417-422 (USSR)

ABSTRACT: Lyusternik [Ref 1] has shown that if the real functionals $f(x)$ and $\varphi(x)$ defined in the real Banach space are differentiable according to Frechet and if x_0 is an extremal point of $f(x)$ with respect to the manifold $\varphi(x) = \varphi(x_0)$, where $\|\text{grad } \varphi(x_0)\| > 0$, then between the gradients there exists the relation $\text{grad } f(x_0) = \mu \text{ grad } \varphi(x_0)$, $\mu = \text{const}$.

In the present paper the authors show with the aid of the methods elaborated by Lyusternik, that this theorem is also valid in linear topological spaces.
There are 7 Soviet references.

SUBMITTED: October 8, 1956

1. Topology   2. Functions - Theory

Card 1/1

20-120-5-3/67

AUTHOR: ~~Voynberg, M.M.,~~ Shragin, I.V.

TITLE: The Operator of Nemytskiy and its Potential in Orlicz-Spaces (Operator Nemytskogo i yego potentsial v prostranstvakh Orlicha)

PERIODICAL: Doklady Akademii nauk SSSR, Vol 120, Nr 5, pp 941-944 (USSR) 1958

ABSTRACT: The Nemytskiy operator h and its potential f, already investigated for several times by one of the authors [Ref 1,2,3] (especially in connection with the nonlinear integral equations of the type of Hammerstein) are considered in the Orlicz-spaces generalized according to Zaanen [Ref 5]. The authors give necessary and sufficient conditions that h transfers functions of the classes L^M, L_M, $L_M^{\varkappa}$ into such ones of L^{M_1}, L_{M_1}, $L_{M_1}^{\varkappa}$. Furthermore, conditions for the boundedness and continuity of h as well as conditions for the continuity and weak semicontinuity of f are given. Altogether ten theorems are formulated. There are 12 references, 7 of which are Soviet, 3 Polish and 2 Dutch.

ASSOCIATION: Moskovskiy oblastnoy pedagogicheskiy institut imeni N.K.Krupskoy (Pedagogical Institute of the Moscow Oblast imeni N.K.Krupskaya)

PRESENTED: February 7, 1958, by S.L.Sobolev, Academician

SUBMITTED: February 7, 1958

1. Topology 2. Operators (Mathematics)

Card 1/1

AUTHORS: Vaynberg, M.M., and Engel'son, Ya.L.   SOV/20-122-5-2/56

TITLE: On the Square Root of a Linear Operator in Locally Convex Spaces
(O kvadratnom korne iz lineynogo operatora v lokal'no vypuklykh
prostranstvakh)

ABSTRACT: Vaynberg [Ref 1] investigated the square root of a linear
completely continuous operator from L^q into L^p ($\frac{1}{p}+\frac{1}{q} = 1$).

These results were extended by Engel'man [Ref 2] to an extended
class of linear completely continuous operators in locally
convex spaces. The present paper contains seven theorems on the
square root of a linear bounded operator in locally convex
spaces, where the assumption of the complete continuity is
dropped. Let E be locally convex, E' strongly conjugate to E;
Let H be a Hilbert space dense in E', $E \subset H \subset E'$; Let the topology
of E majorize the topology in E introduced by H; let the same be
valid for the topologies of H and E'; for $y \in H$, let the bilinear
functional $\langle x,y \rangle$, where $y \in E'$ and $x \in E$ or $x \in E''$, be identical
in H with the scalar product.
Theorem: Let A be a linear bounded operator of E' in E being
selfadjoint and positive in H. Then the square root $A^{1/2}$ of the
operator A considered in H is a bounded operator of H in E'' and

Card 1/2

On the Square Root of a Linear Operator in Locally Convex   SOV/20-122-5-2/56
Spaces

has a continuous continuation $\widetilde{A}^{1/2}$ of E' into H.

Theorem: If E is a quasi barrel space (= espace tonnelle), then
$A = A^{1/2}\widetilde{A}^{1/2}$.

There are 7 references, 4 of which are Soviet, 1 American, and
2 French.

ASSOCIATION: Moskovskiy oblastnoy pedagogicheskiy institut imeni N.K.Krupskoy
(Moscow Oblast Pedagogical Institute imeni N.K. Krupskaya)
Latviyskiy gosudarstvennyy universitet imeni P.Stuchki
(Latvian State University imeni P.Stuchka)

PRESENTED: June 3, 1958, by S.L.Sobolev, Academician

SUBMITTED: June 2, 1958

Card 2/2